



# **Adaptec HBA 1000 Series Host Bus Adapters**

**University Training Module**

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## Introduction

The Microsemi Adaptec HBA 1000 series of host bus adapters is the first in a broad family of PMC Smart Storage Solutions to combine industry-leading silicon and board and storage stack expertise in a single unified solution.



HBA 1000 adapters offer high speeds (up to 12 Gb/sec per port) while reducing power usage, and are the high performance solution for data centers and businesses concerned with system resilience, efficiency and ease of use.

Read on to learn more about Adaptec's new HBAs. At the completion of this module, you should be able to:

- Identify and explain the basic new features of the HBA 1000 series of HBAs.
- Understand how to use the new PMC Adaptec model numbers to discern adapter features, such as port configuration.
- Understand the basic differences between the HBA 1000 series of HBAs and earlier HBA models.

## Adaptec Host Bus Adapters: A Quick Review

PMC Adaptec HBA 1000 host bus adapters (HBAs) share these features with prior generations of HBAs:

- Support for SAS and SATA hard disk drives (HDDs), Solid State Drives (SSDs), removable media, and SAS tape drives
- Hot-plug support for both direct-attached drives and SAS expanders
- Support for external storage enclosures, such as RAID enclosures (RBODs) and JBODS
- Enclosure management support through LED header and SES2/SGPIO
- Flash ROM for firmware and BIOS updates
- Universal asynchronous receiver/transmitter (UART) debug/diagnostic port
- Management utilities:
  - Adaptec maxView Storage Manager (MSM)
  - Adaptec RAID Controller Configuration (ARCCONF), a command line utility
  - Adaptec RAID Configuration utility, a BIOS-based utility with uEFI BIOS support on uEFI-capable motherboards; includes the Array Configuration Utility (ACU).
- Major operating system support through included drivers and through the most current, up-to-date drivers available online.

## What's New About the HBA 1000 Series?

In addition to being the first products in the new family of Smart Storage Solutions, the HBA 1000 adapters include these features which build upon Adaptec's legacy HBAs.

### Improved Performance

HBA 1000 adapters provide speeds of up to 12 Gb/sec per port and can support up to 1,300,000 IOPS at a 4 KB block size, which is significantly faster than legacy 6 Gb/sec HBAs.



**Note:** HBA 1000 adapters will perform at full speed (up to 12 Gb/sec) when they are paired with 12-Gb/sec devices. HBA performance *may* be limited by device speed if the adapter is paired with 6-Gb/sec devices; however, with SAS and SATA edge buffering, HBA 1000 adapters may improve the performance of legacy 6 Gb/s devices.

## Low Power Usage

The cost of running and cooling servers is increasingly a concern for businesses. In fact, a general industry ‘rule of thumb’ holds that it costs as much to cool a server as it does to power it.

Additionally, business with growing storage requirements find themselves limited by power constraints, not just economically but literally.

HBA 1000 adapters are highly efficient and use an average of 60% less power (and therefore generate less heat) than competing high-port-count adapters.

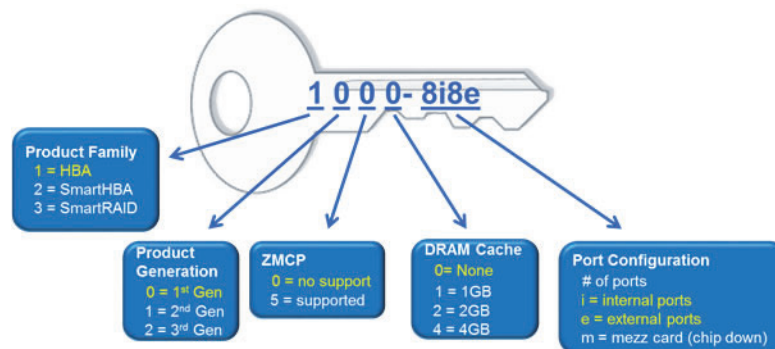
## High Port Count in MD2 Form Factor

Mini-SAS HD connectors give you greater flexibility and more configuration options by supporting a high number of SAS/SATA ports on one HBA. The low-profile MD2 form factor of the adapter also enables you to build within 2U servers, saving valuable space in your server racks.

You can directly connect up to 16 devices to an HBA 1000 adapter (depending on the model; some HBA 1000 models support up to 8 devices only) without using an expander; with expanders, you can connect a maximum of 238 devices.

## About Host Bus Adapter Model Numbers

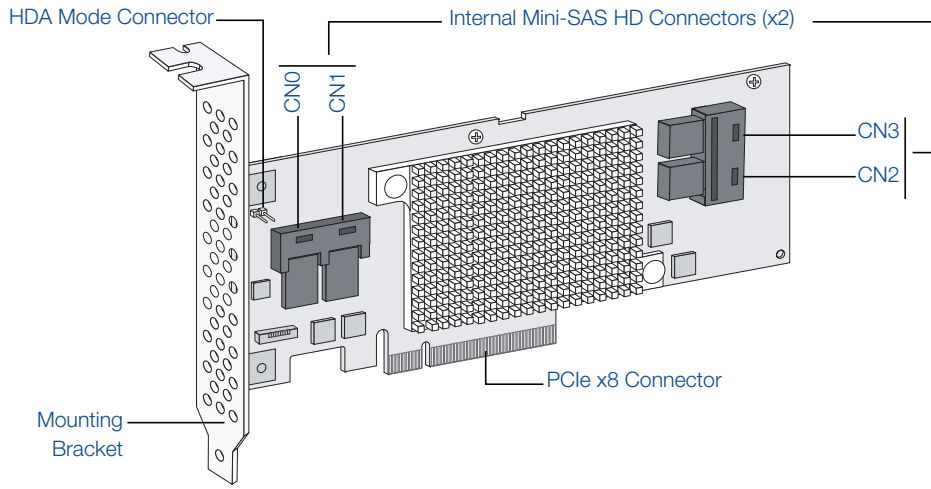
Model numbers offer easy clues to each adapter’s main features. With the launch of the HBA 1000, PMC Adaptec introduces a new model numbering format:



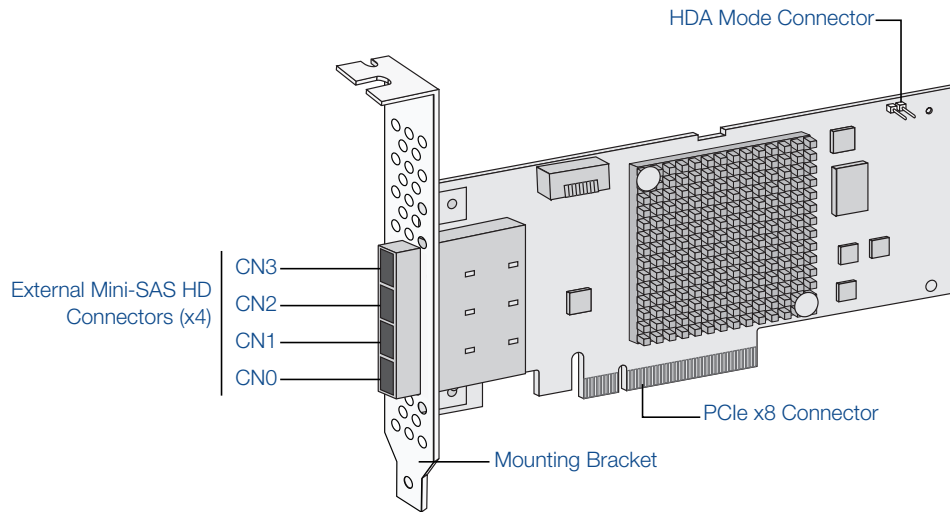
All HBA 1000 adapters have an 8-lane PCIe Gen 3 interface.

## The PMC Adaptec HBA 1000 Series Adapters

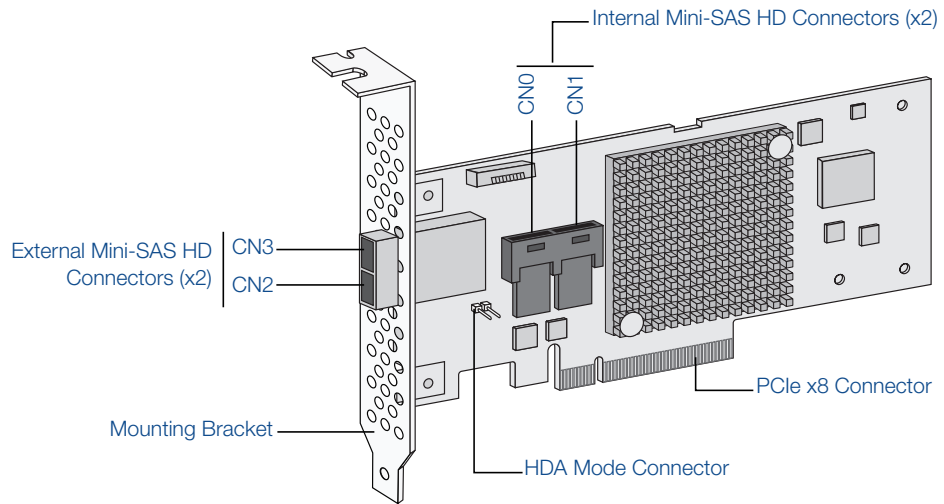
### HBA 1000-16i



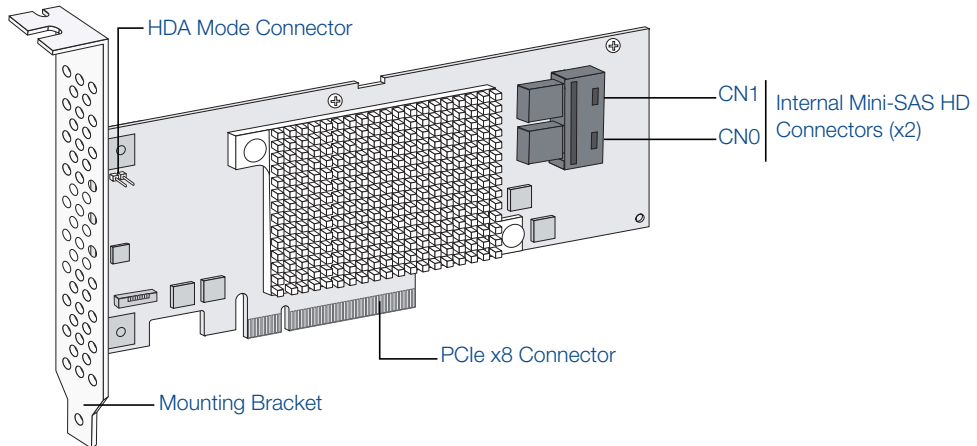
### HBA 1000-16e



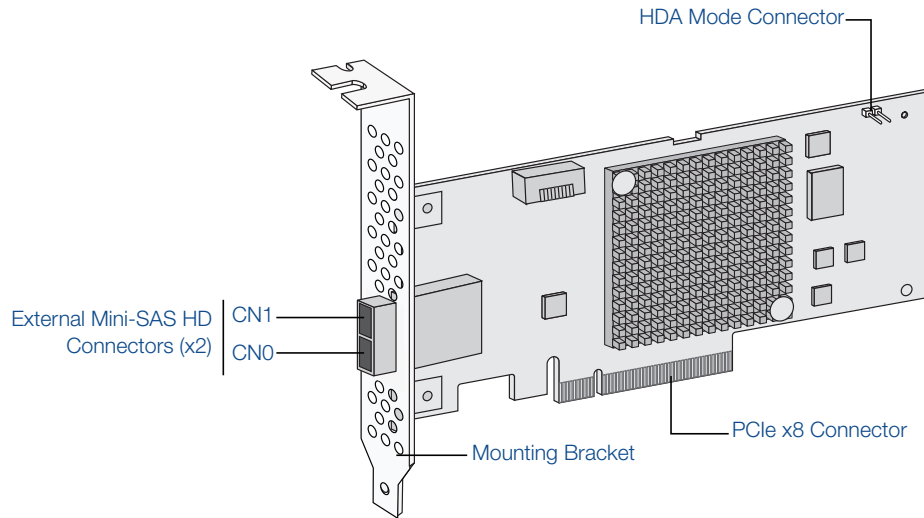
**HBA 1000-8i8e**



**HBA 1000-8i**



HBA 1000-8e



**Why to Buy?** HBA 1000 adapters offer the highest bandwidth, lowest latency, and highest I/O performance paired with broad compatibility, support for SAS expanders, and enclosure management—plus support for SAS and SATA HDDs, SSDs, removable media, and SAS tape drives.

HBA 1000 adapters are ideal for high performing I/O solutions that support SAS/SATA HDDs and SSDs and require maximum connectivity.

**HBA 1000 Series Features.**

	HBA 1000-16i	HBA 1000-16e	HBA 1000-8i8e	HBA 1000-8i	HBA 1000-8e
<b>Ordering Part #</b>	2288400-R	2288200-R	2288500-R	2288300-R	2288100-R
<b>Bandwidth</b>	12 Gb/second				
<b>Form Factor</b>	MD2 (Low Profile)				
<b>Dimensions</b>	2.535" H x 6.6" L (64 mm x 167 mm)				
<b>Ports (Phys)</b>	16 Internal	16 External	8 Internal 8 External	8 Internal	8 External
<b>Maximum # of Devices</b>	16 Direct-attached or 128 with Expanders			8 Direct-attached or 128 with Expanders	
<b>Connectors</b>	4 Internal mini-SAS HD (SFF-8643)	4 External mini-SAS HD (SFF-8644)	2 Internal mini-SAS HD (SFF-8643) 2 External mini-SAS HD (SFF-8644)	2 Internal mini-SAS HD (SFF-8643)	2 External mini-SAS HD (SFF-8644)
<b>Bus Interface</b>	8-lane PCIe Gen 3				
<b>Operating Current</b>	0.3A @ 3.3V 0.9A @ 12V	0.1A @ 3.3V 0.9A @ 12V	0.1A @ 3.3V 1A @ 12V	0.3A @ 3.3V 0.7A @ 12V	0.1A @ 3.3V 0.7A @ 12V
<b>MTBF</b>	2 million hours				
<b>Typical Power</b>	11.8 W	11.1 W	12.3 W	9.4 W	8.7 W

## Series HBA 1000 vs. Series 7H: Comparing Key Features

This table compares the key features of each of PMC Adaptec HBAs:

HBA Series	Max. No. of Ports	Max. Supported Devices	Connector Type	Interface	Speed per Port	IOPS	Encryption	Form Factor
HBA 1000 Series	16	238	Mini-SAS HD (SFF-8643, SFF-8644)	8-lane PCIe Gen 3	12 Gb/sec	1,300,000	No	MD2 (Low Profile)
Series 7H	16	128	Mini-SAS HD (SFF-8643, SFF-8644)	8-lane PCIe Gen 3	6 Gb/sec	800,000– 1,000,000	No	MD2 (Low Profile)

For the most recent updates to our product line and for detailed information and specifications, please call, email or visit our website:

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